

FIG. 29

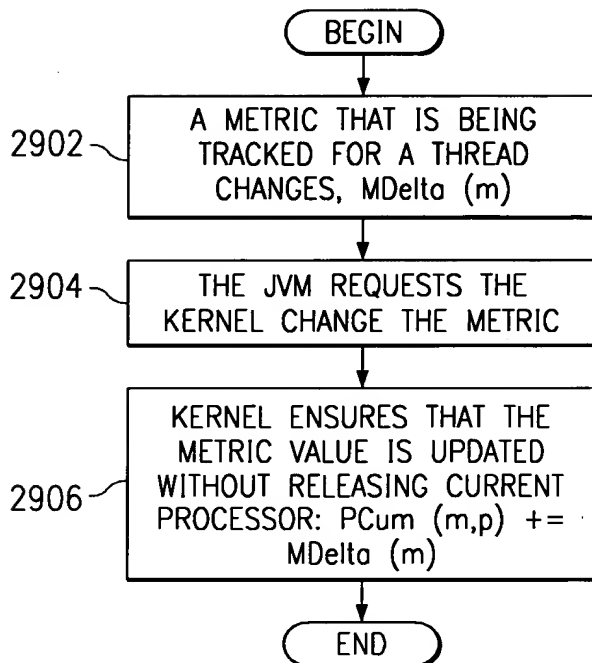


FIG. 30

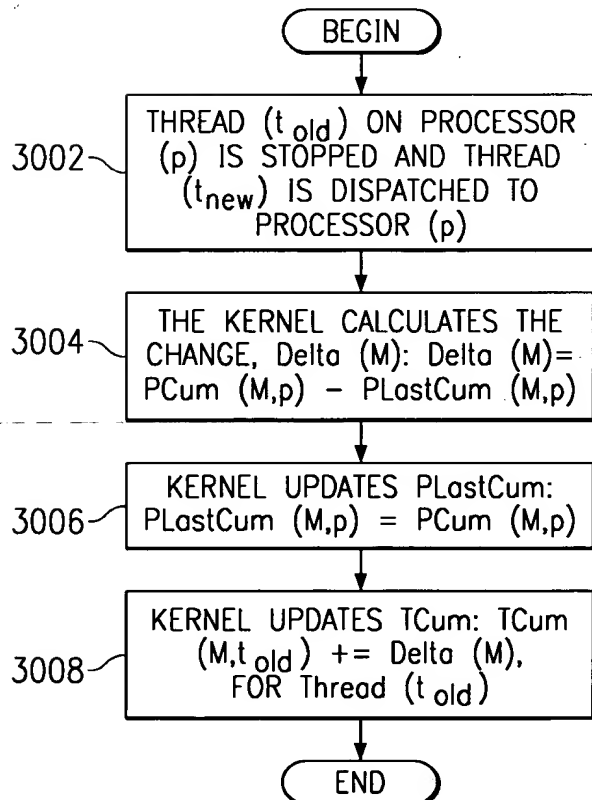


FIG. 31

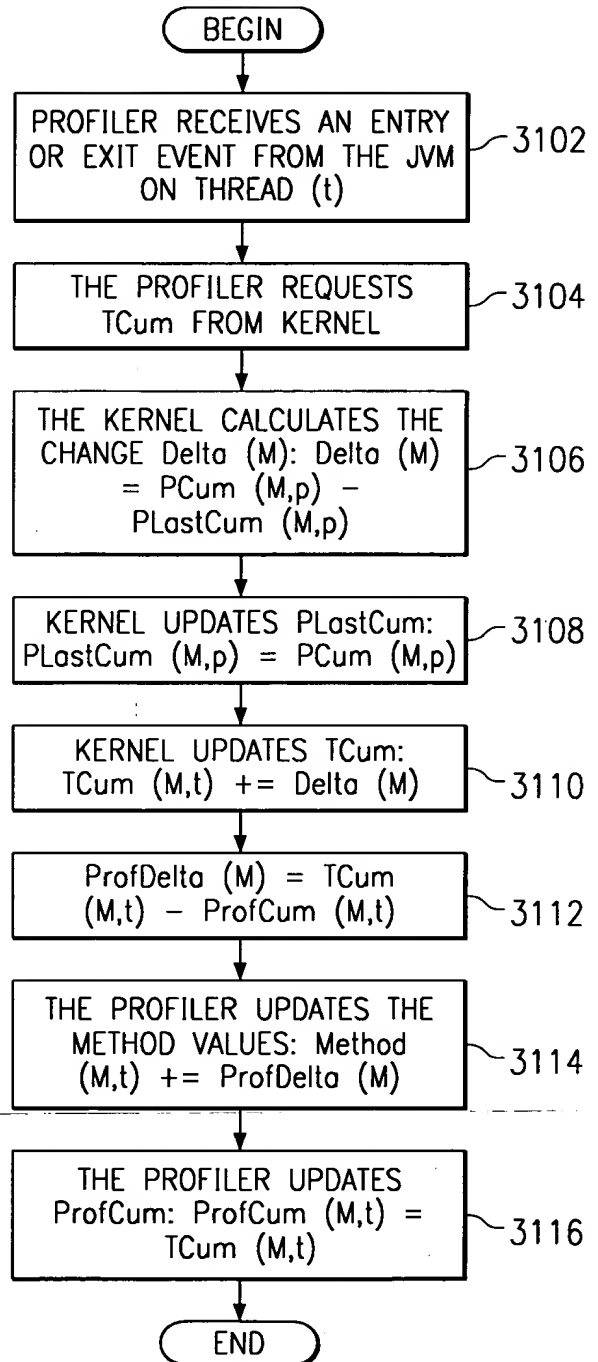


FIG. 26A

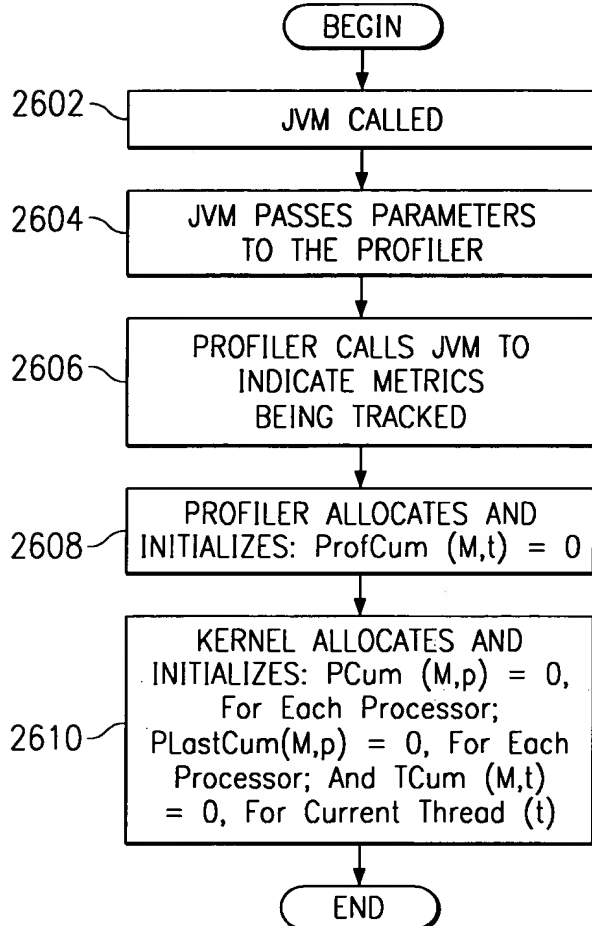


FIG. 26B

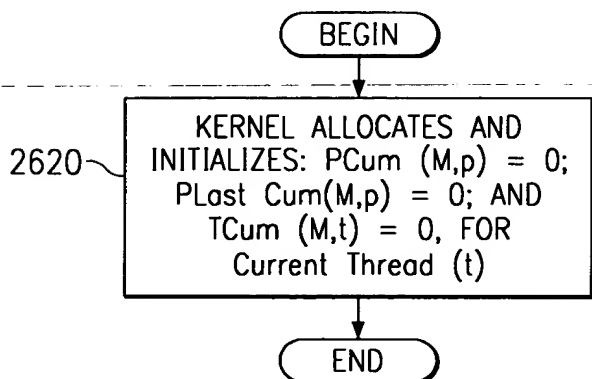


FIG. 26C

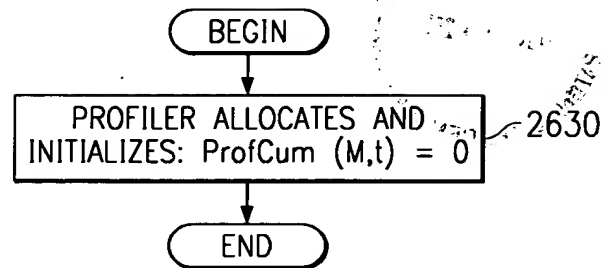


FIG. 27

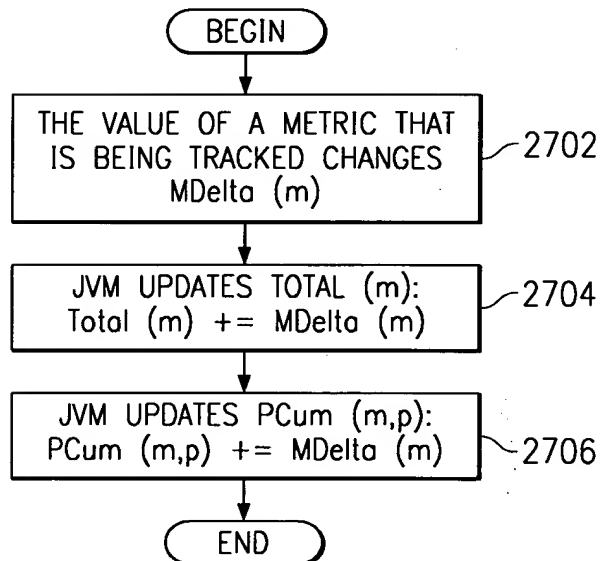


FIG. 28

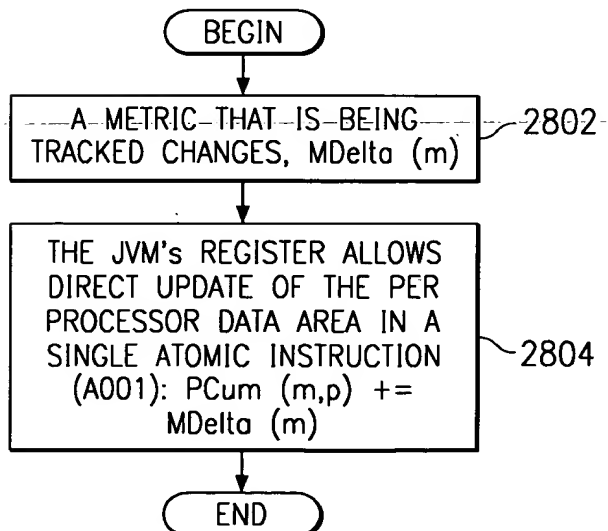


FIG. 24

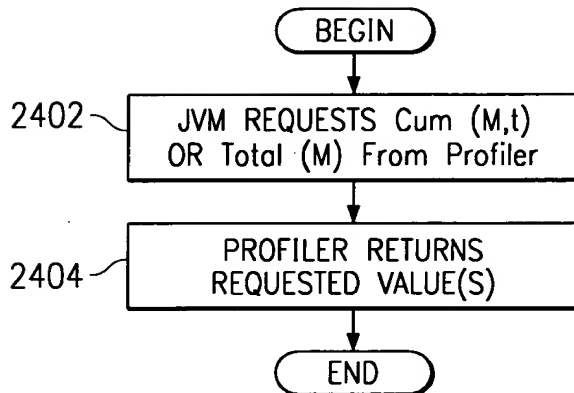


FIG. 25

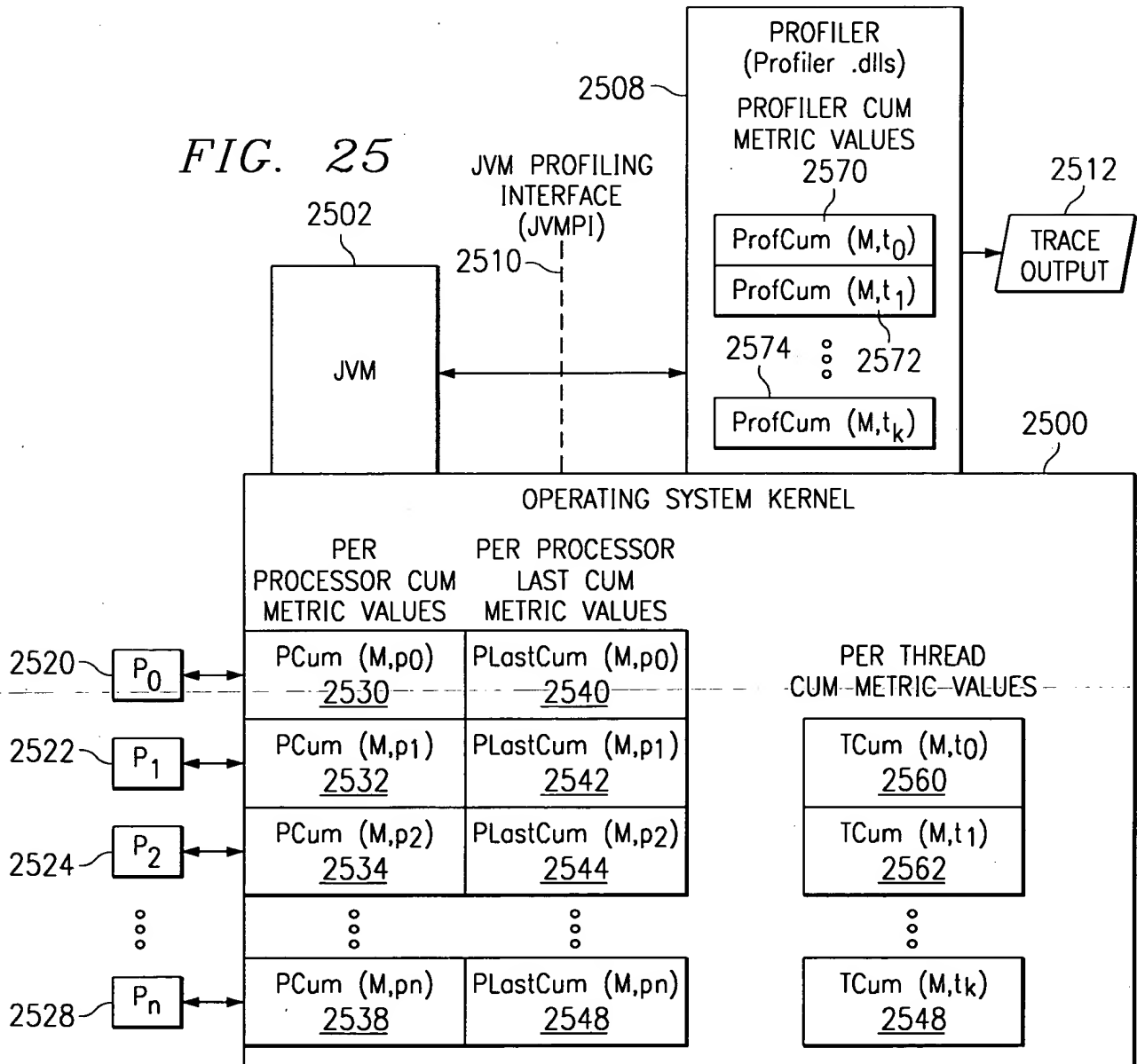


FIG. 21A

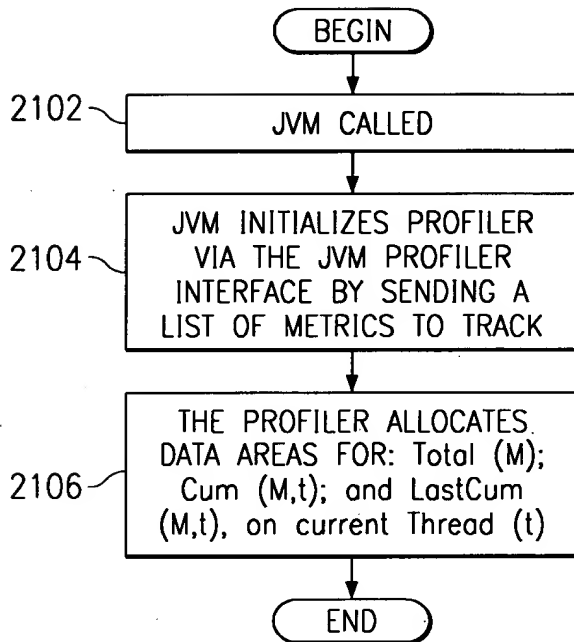


FIG. 21B

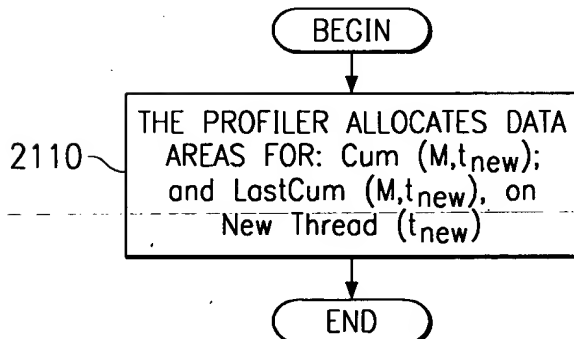


FIG. 22

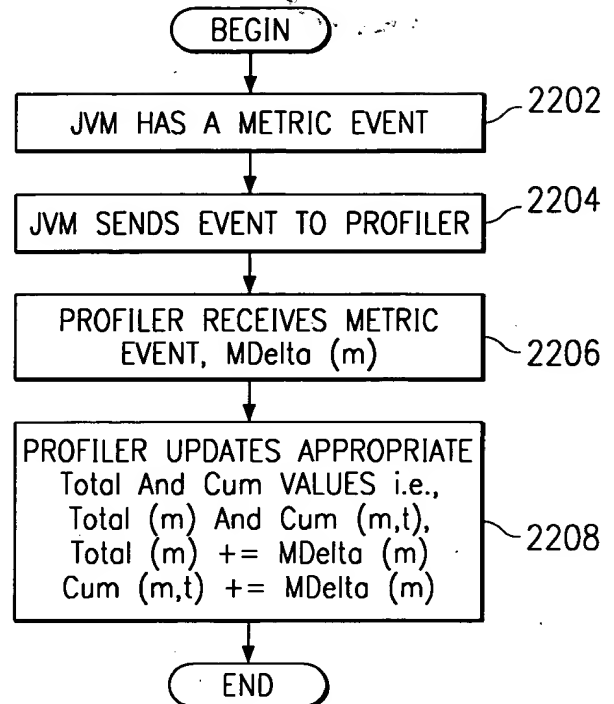


FIG. 23

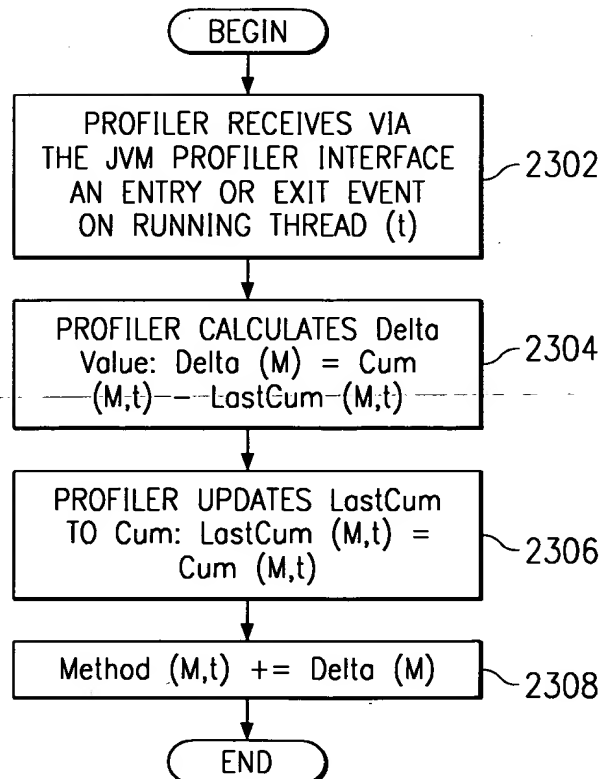


FIG. 19

MAJOR CODE	MINOR CODE	DATA ITEM 1	DATA ITEM 2	DATA ITEM 3	DATA ITEM 4	DATA ITEM 5	DESCRIPTION
0x4	LEVEL + 0x1	DEPTH	N/A	N/A	N/A		BEGIN INTERRUPT AT LEVEL
0x4	LEVEL + 0x80000001	DEPTH	N/A	N/A	N/A		END INTERRUPT AT LEVEL
0x10	0xab	SYSTEM TID	JAVA TID	IS SYSTEM THREAD (BOOLEAN)	N/A		THREAD CREATED WITHOUT A NAME WHILE TRACE ACTIVE
0x10	0xac	SYSTEM TID	N/A	N/A	N/A		IDENTIFIES THE IDLE THREAD
0x10	0xad	SYSTEM TID	N/A	N/A	N/A		IDENTIFIES THE GARBAGE COLLECTION THREAD
0x10	0xae	SYSTEM TID	JAVA TID	THREAD NAME	N/A		THREAD CREATED WITH A NAME WHILE TRACE ACTIVE
0x30	0x10	OBJECT ID	METHOD BLOCK ADDRESS	N/A	N/A		METHOD INVOCATION (INTERPRETED)
0x30	0x10 + 0x80000000	OBJECT ID	METHOD BLOCK ADDRESS	N/A	N/A		METHOD EXIT (INTERPRETED)
0x40	0x7fffffff	NUMBER (n) OF STACK UNWINDS AT TIMER INTERRUPT	pc1-PROGRAM COUNTER OF INTERRUPTED ROUTINE	pc2-CALLER OF INTERRUPTED ROUTINE	pcn-1 OF n-2nd CALLER OF INTERRUPTED ROUTINE	pcn OF n-1st CALLER OF INTERRUPTED ROUTINE
0x41	0x7fffffff	NUMBER (n) OF STACK UNWINDS AT INSTRUMENTED ROUTINE	pc1-PROGRAM COUNTER OF INSTRUMENTED ROUTINE	pc2-CALLER OF INSTRUMENTED ROUTINE		pcn OF n-1st CALLER OF INSTRUMENTED ROUTINE
0x50	0x10	OBJECT ID	METHOD BLOCK ADDRESS	N/A	N/A		METHOD INVOCATION (JITTED)
0x50	0x10 + 0x80000000	OBJECT ID	METHOD BLOCK ADDRESS	N/A	N/A		METHOD EXIT (JITTED)

Units : : Ticks
Total : : 342

LvL	RL	Calls	Base	Cum	Indent Name	
1	1	1	0	342	- _Thread-21__(0xe0046618)	
2	1	3	0	342	-- J:nulltestScore()I	
3	1	2	0	272	--- J:nulltestMilliseconds(I)I	
4	1	29450	0	271	---- J:nullexecute()I	
5	1	271	0	271	----+ stack_0x40	
6	1	271	0	271	----+- F:ExecuteJava	1802
7	1	271	0	271	----+--- F:jit_invokeCompiledEntryMethod	
8	1	271	0	271	----+---- F:_jit_invokeentry	
9	1	271	0	271	----+----- F:JITInvokeCompiledEntryMethod_md	
10	1	271	0	271	----+-----+ J:nullrun()V	
11	2	271	0	271	----+-----+- J:nulltestScore()I	1806
12	2	271	0	271	----+-----+--- J:nulltestMilliseconds(I)I	
13	2	271	268	271	----+-----+---- J:nullexecute()I	
14	1	2	0	2	----+-----+----- F:jperf_methodEntry	
15	1	2	0	2	----+-----+-----+ F:SoftTracehook	
16	1	2	2	2	----+-----+-----+- F:enable_interrupts	
14	1	1	1	1	----+-----+----- F:jperf_methodExit	
4	1	1	0	1	---- stack_0x40	
5	1	1	0	1	----+ F:ExecuteJava	1804
6	1	1	0	1	----+- F:jit_invokeCompiledEntryMethod	
7	1	1	0	1	----+--- F:_jit_invokeentry	
8	1	1	0	1	----+---- F:JITInvokeCompiledEntryMethod_md	
9	1	1	0	1	----+----- J:nullrun()V	
10	2	1	0	1	----+-----+ J:nulltestScore()I	1808
11	2	1	0	1	----+-----+- J:nulltestMilliseconds(I)I	
12	1	1	0	1	----+-----+--- J:nullexecute()I	
13	1	1	0	1	----+-----+---- F:jperf_methodExit	
14	1	1	0	1	----+-----+----- F:SoftTracehook	
15	1	1	1	1	----+-----+-----+ F:enable_interrupts	
4	1	2	0	0	---- J:nullcleanUp()I	

FIG. 18

1700

ArcFlow Output

Base - Time/Instructions directly in function

Cum - Time/Instructions directly & indirectly in function

ArcFlow Invariants:

- 1) $\text{Sum}(\text{Parent}(\text{Calls})) = \text{Self}(\text{Calls})$
- 2) $\text{Sum}(\text{Parent}(\text{Base})) = \text{Self}(\text{Base})$
- 3) $\text{Sum}(\text{Parent}(\text{Cum})) = \text{Self}(\text{Cum})$
- 4) $\text{Sum}(\text{Child}(\text{Cum})) = \text{Self}(\text{Cum}) - \text{Self}(\text{Base})$

Source	Calls	Base	Cum	Function
Self	1	0	19	[0] pt_pidtid
Child	1	3	19	C
Parent	1	3	19	pt_pidtid
Self	1	3	19	[1] C
Child	1	2	9	B
Child	1	3	7	A
Parent	1	3	7	C
Parent	1	3	7	B
rParent	1	1	1	B
Self	3	7	17	[2] A
			15	
Child	3	5	7	B
Child	1	1	1	X
Parent	2	3	4	A
rParent	1	2	3	A
Parent	1	2	9	C
Self	5	8	13	[3] B
			17	
Child	1	3	7	A
rChild	1	1	1	A
Child	1	1	1	B
Parent	1	1	1	A
Self	1	1	1	[4] X

FIG. 17

FIG. 15B

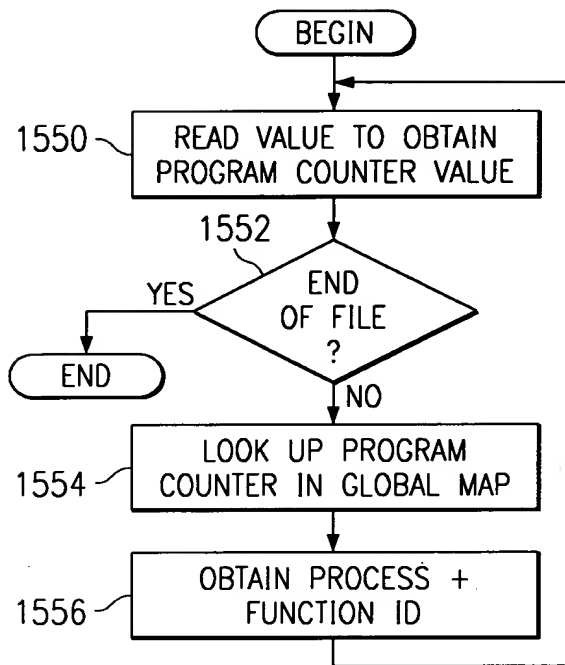
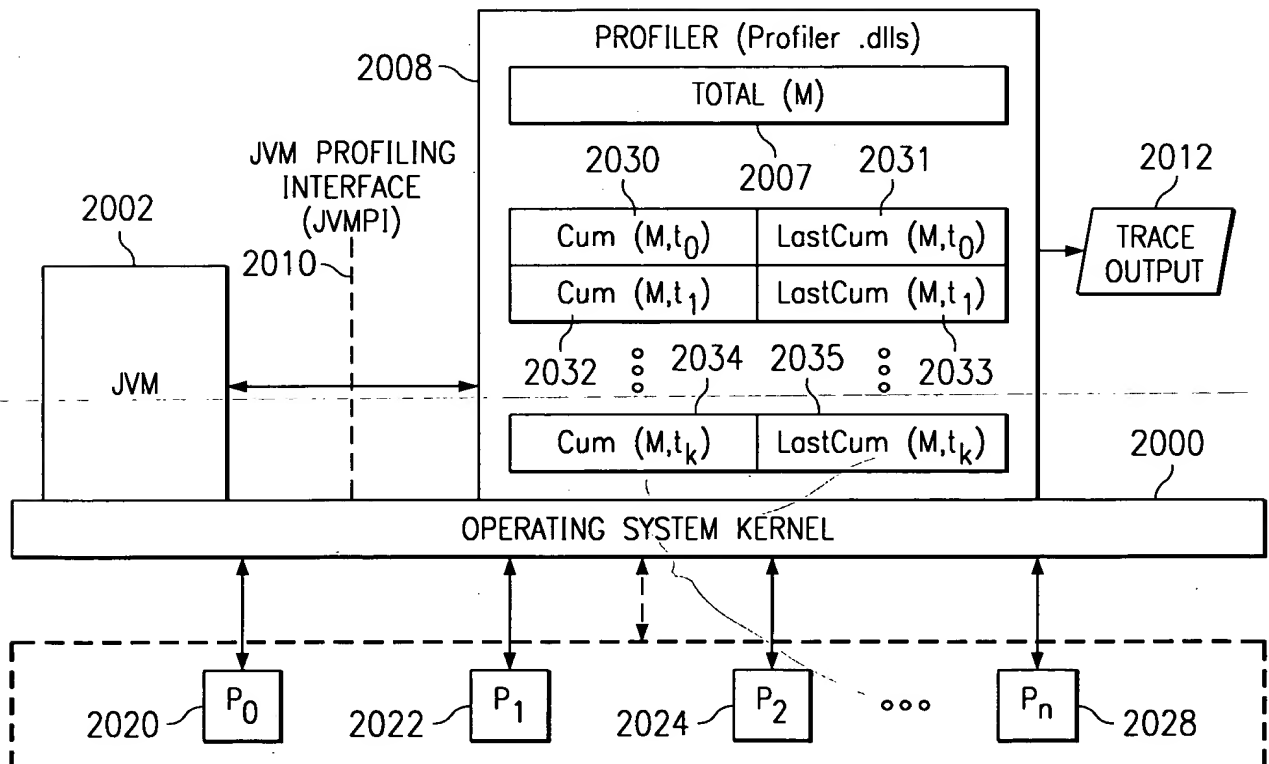


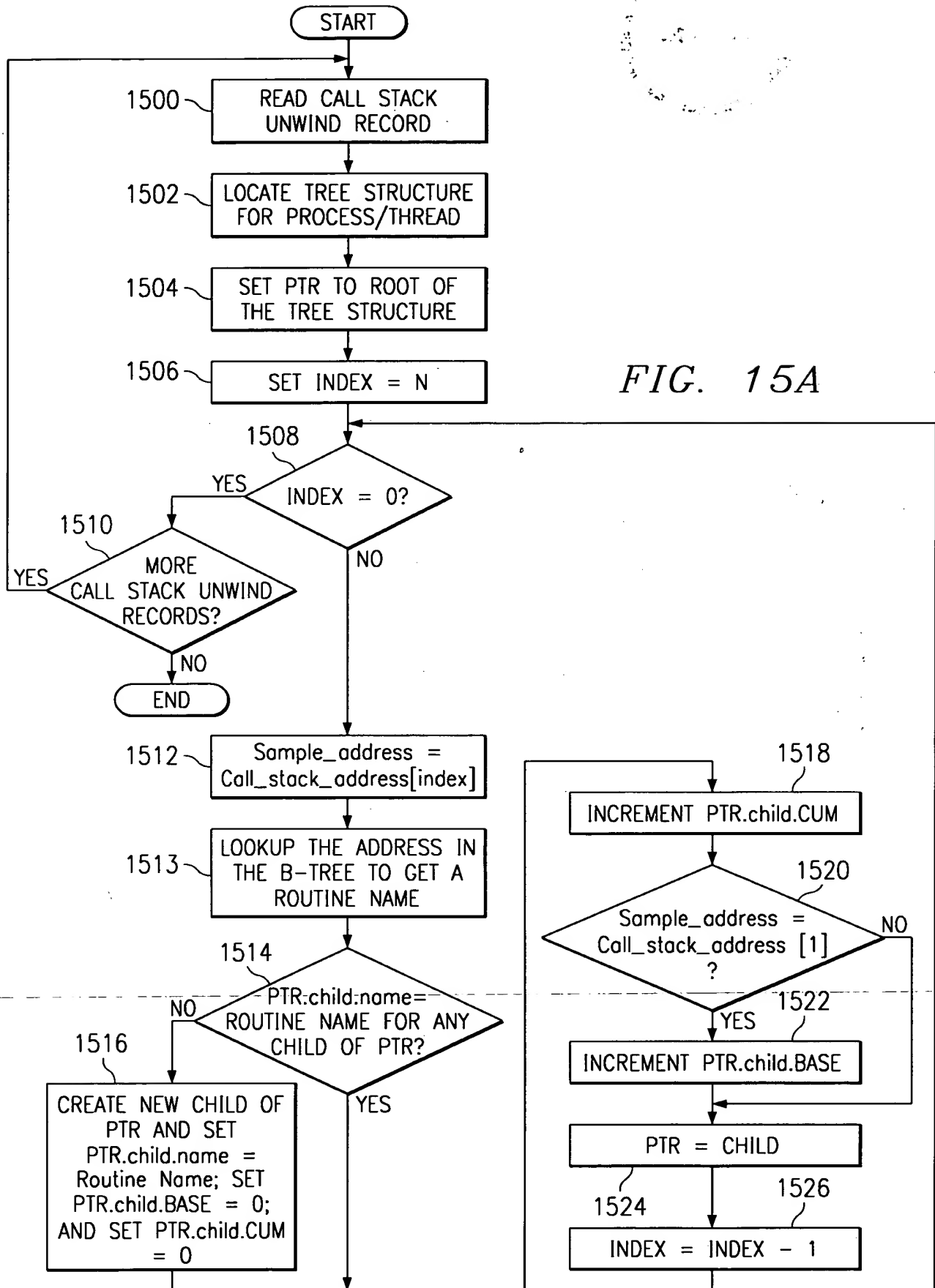
FIG. 16

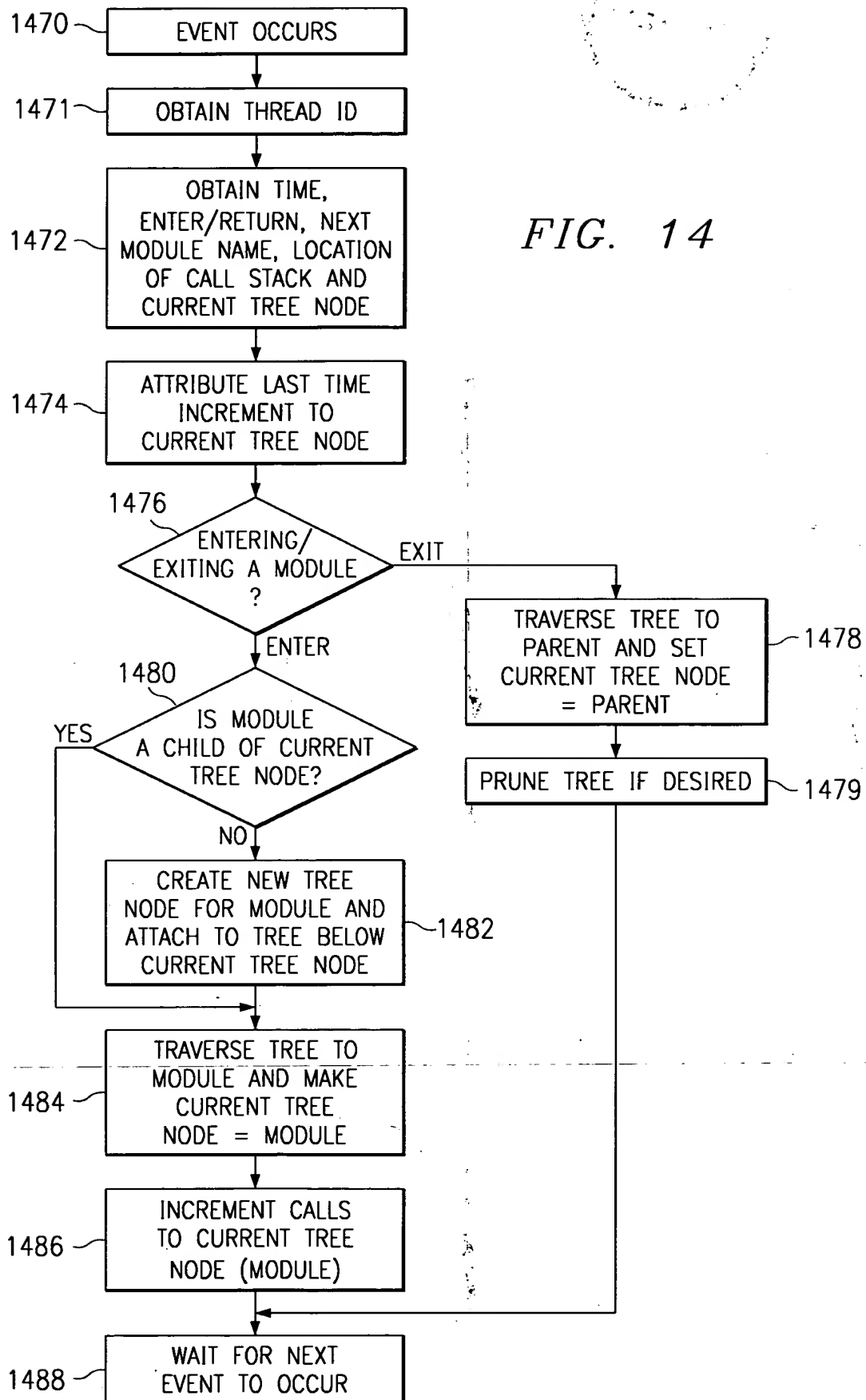
1600

1602 CALLS	1604 BASE	1606 CUM	1608 NAME
1	0	19	pt_pit.tid
1	3	19	C
3	7	14	A
5	8	13	B
1	1	1	X

FIG. 20







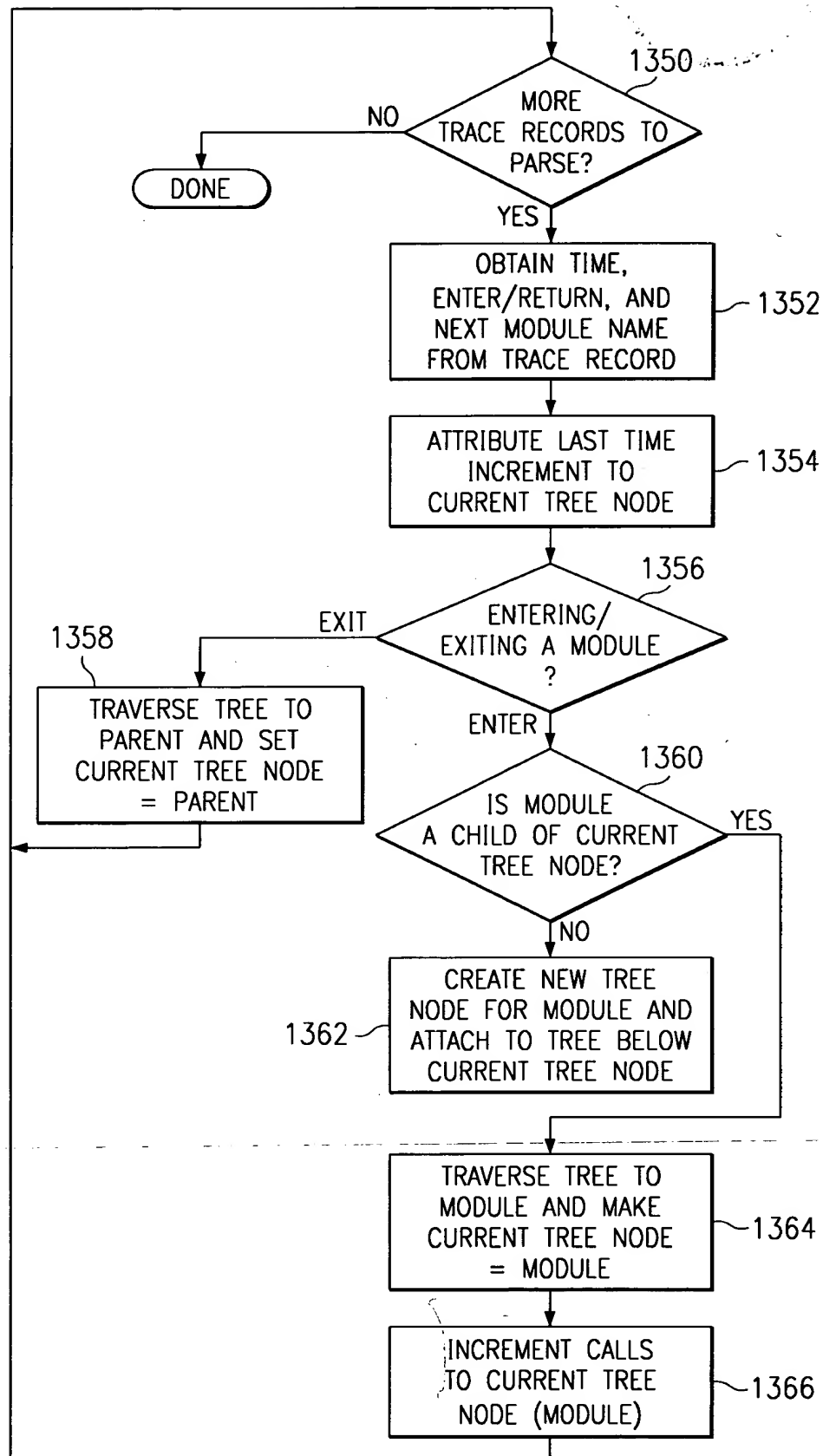


FIG. 13

FIG. 11A

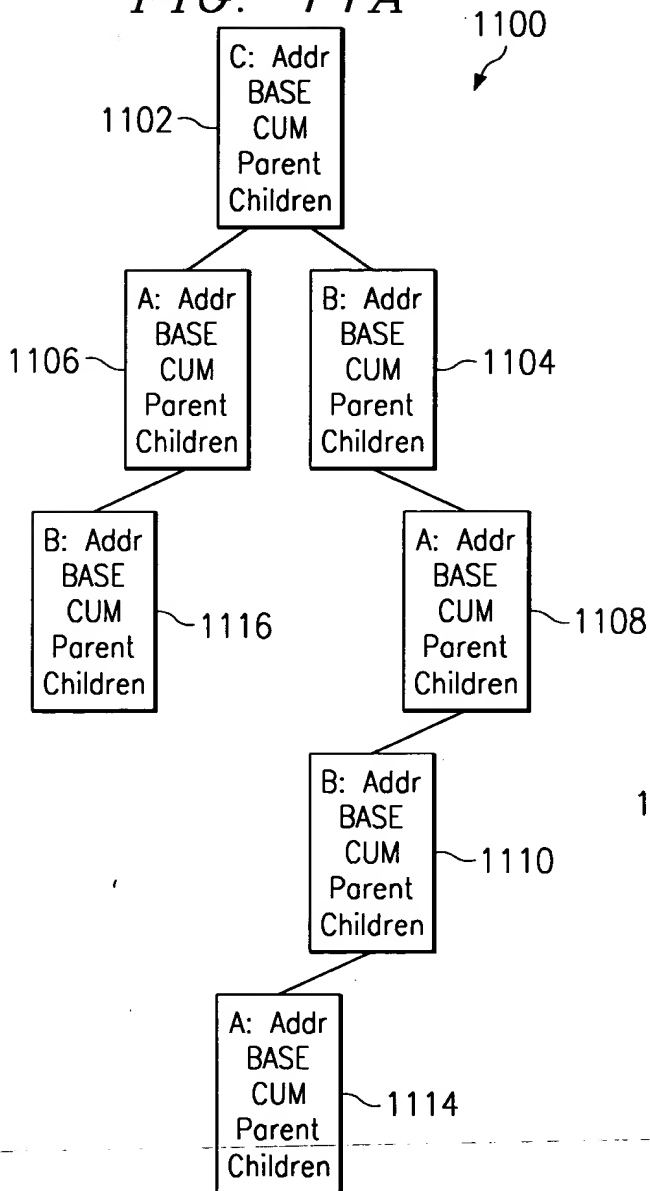


FIG. 11B

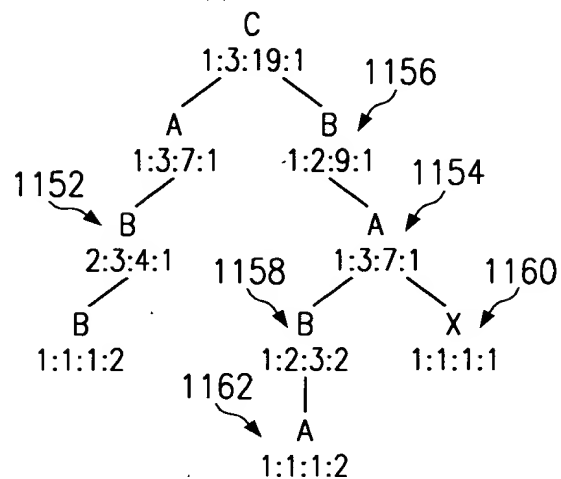


FIG. 12

1230	1232	1234	1236	1238	1240
LEVEL	RL	CALLS	BASE	CUM	INDENT
0	1	1	0	19	pt_pdtid
1	1	1	3	19	-C
2	1	1	3	7	--A
3	1	2	3	4	----B
4	2	1	1	1	-----B
2	1	1	2	9	--B
3	1	1	3	7	----A
4	2	1	2	3	-----B
5	2	1	1	1	-----A
4	1	1	1	1	-----X

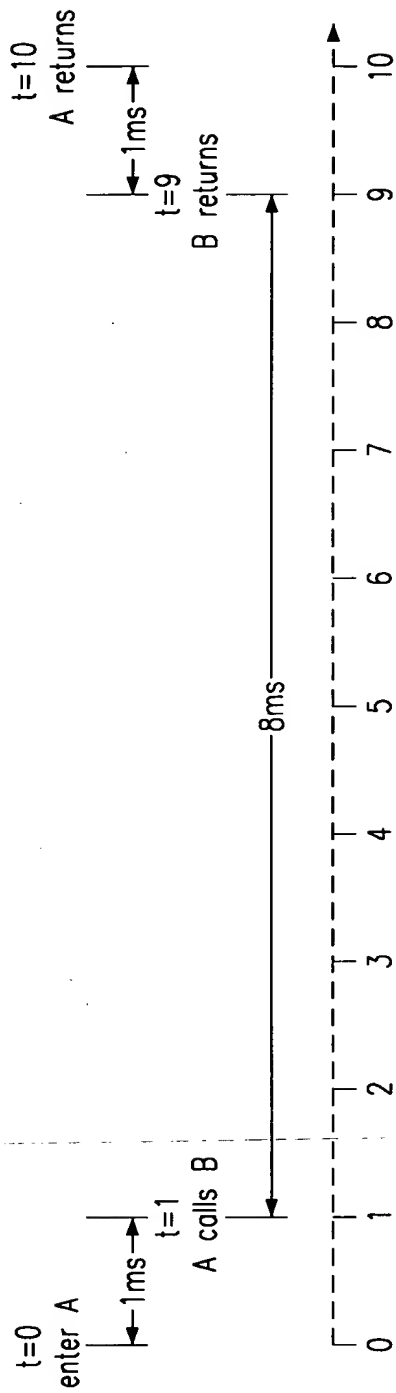


FIG. 10C

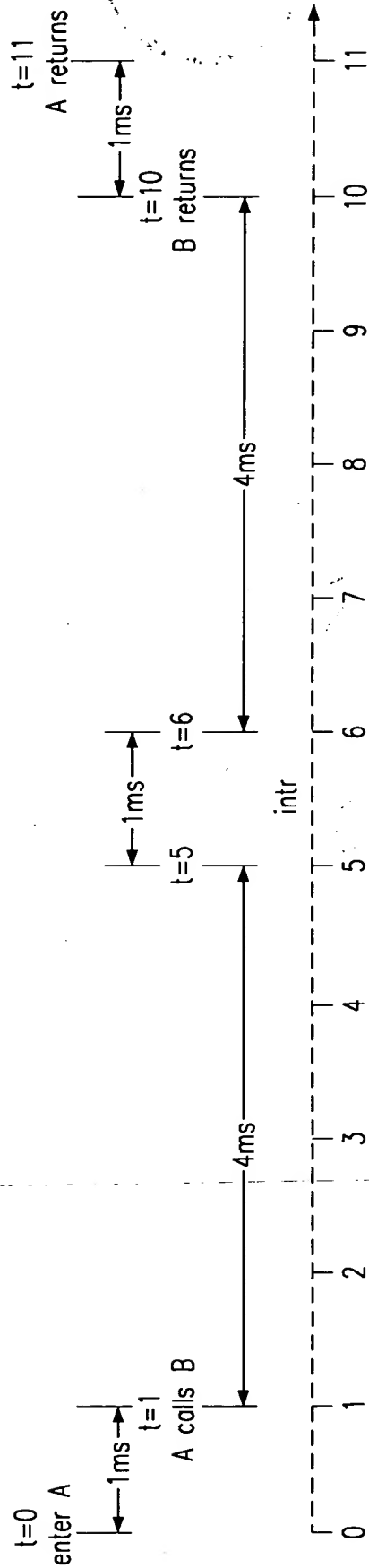


FIG. 10D

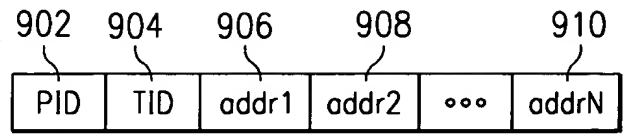
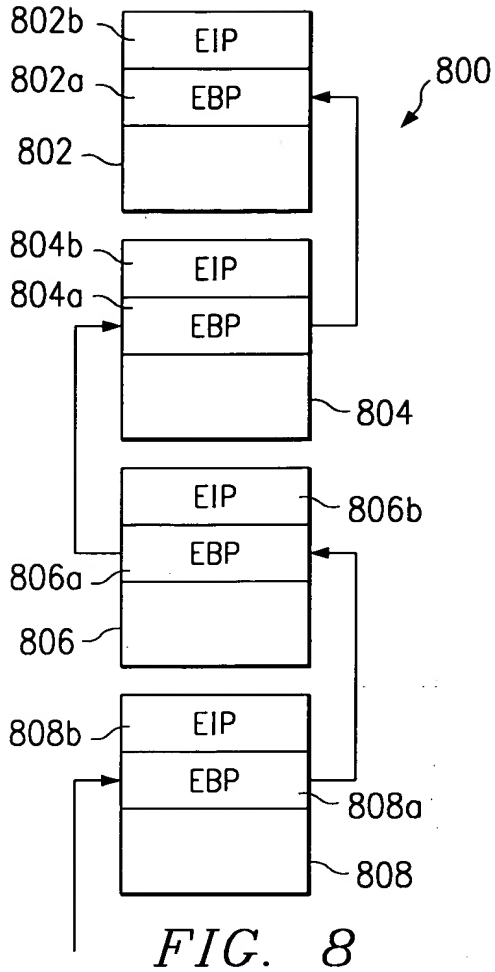


FIG. 9

SAMPLE	CALL STACK @ SAMPLE
1	C
2	CAB
3	CAB
4	CAB
5	C
6	CBA
7	CBABA
8	CBA
9	CBA
10	C

FIG. 10B

TIMESTAMP	EVENT	CALL STACK AFTER EVENT
0	ENTER C	
1	ENTER A	C
2	ENTER B	CA
3	EXIT FROM B	CAB
4	ENTER B	CA
5	ENTER B	CAB
6	EXIT FROM B	CABB
7	EXIT FROM B	CAB
8	EXIT FROM A	CA
9	ENTER B	C
10	ENTER A	CB
11	ENTER B	CBA
12	ENTER A	CBAB
13	EXIT FROM A	CBABA
14	EXIT FROM B	CBA
15	ENTER X	CBAX
16	EXIT FROM X	CBA
17	EXIT FROM A	CB
18	EXIT FROM B	C
19	EXIT FROM C	

FIG. 10A

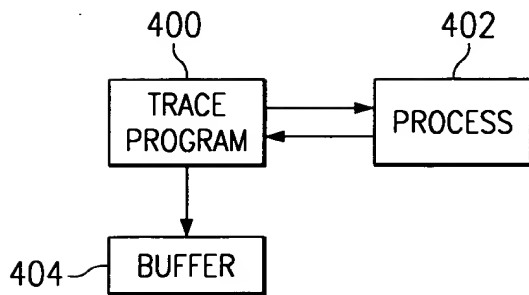


FIG. 4

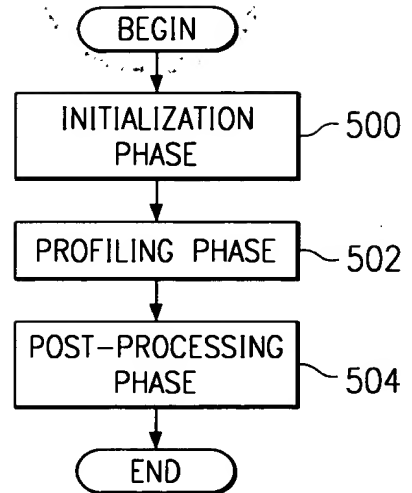


FIG. 5

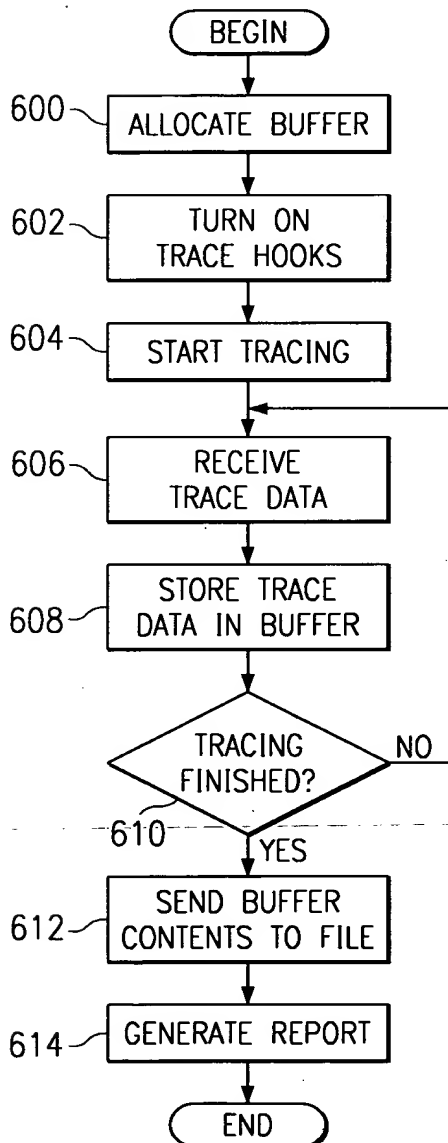


FIG. 6

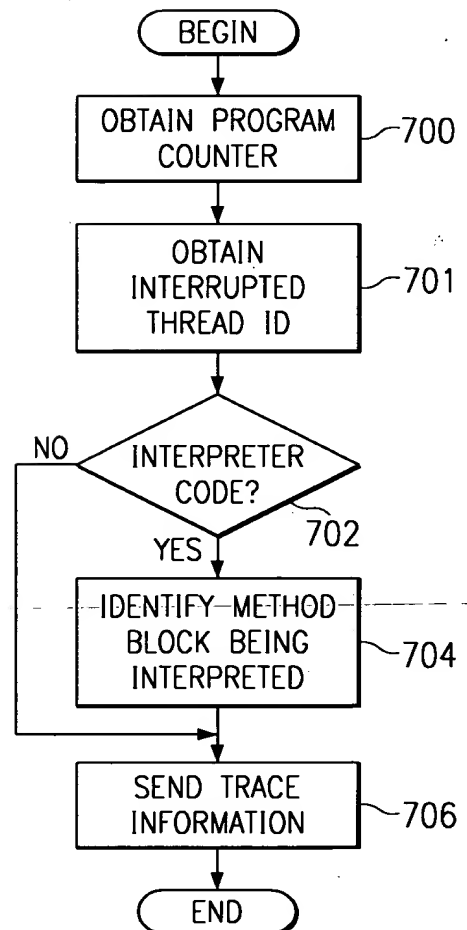
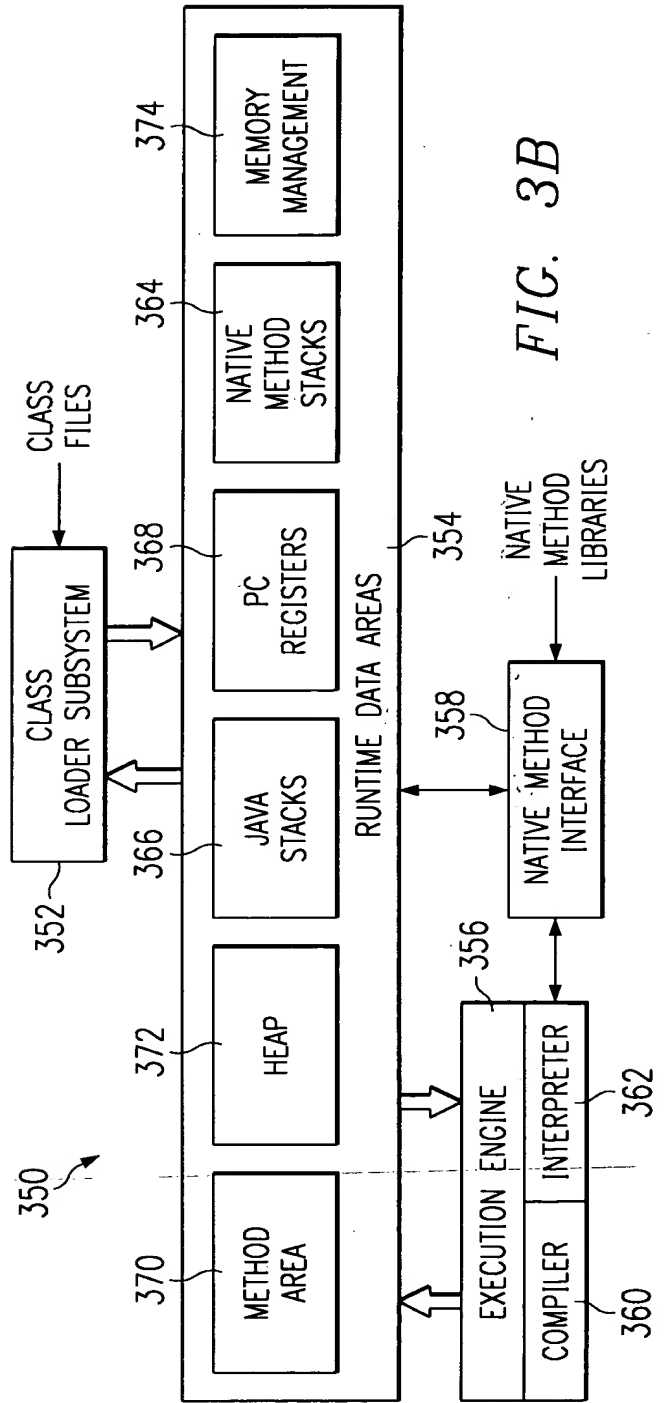
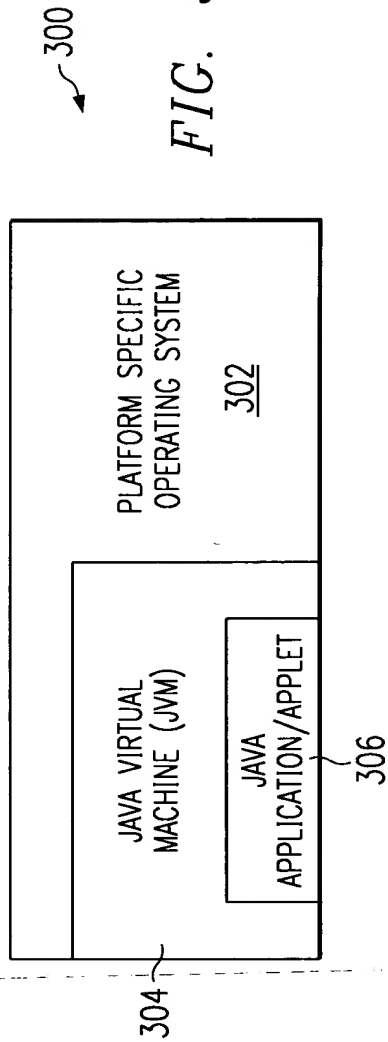


FIG. 7



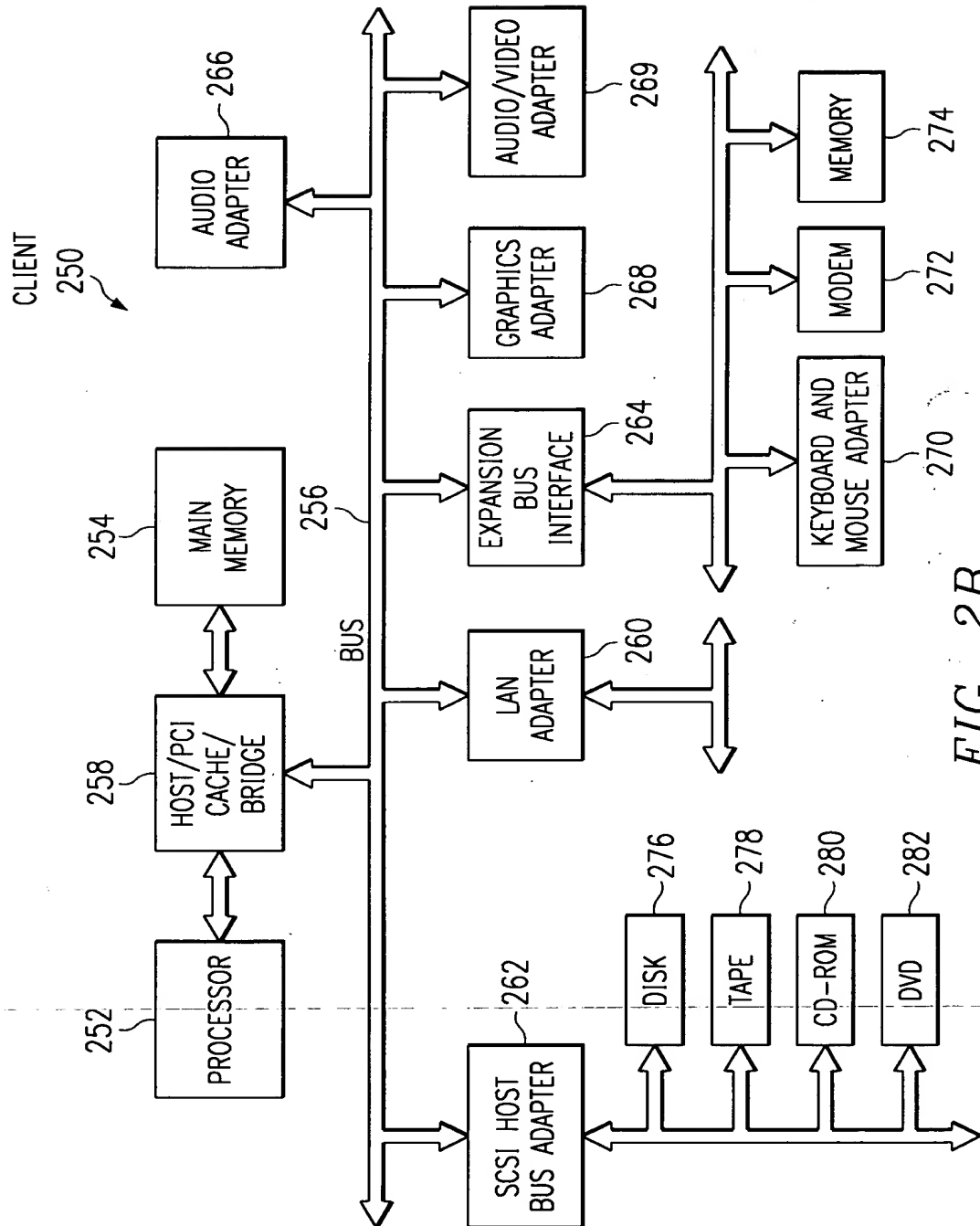


FIG. 2B

FIG. 1

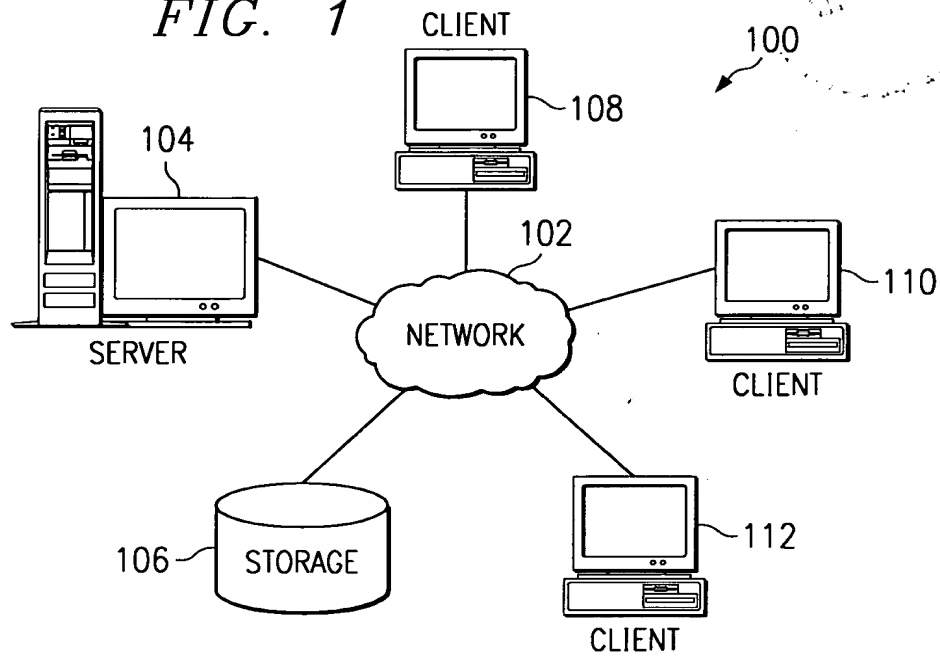


FIG. 2A

